

REMARKS

Claims 1, 2, 8, 11, and 17-21 have been canceled. Claims 5-7 have been amended to change the dependencies. New Claims 22-26 has been added. Support for the new claims is presented throughout the specification. No new mater has been added. Applicant respectfully requests entry of the amendments and reconsideration of the present application in view of the amendments and remarks set forth below.

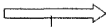
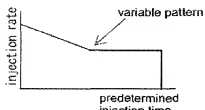
Discussion of Claim Rejections Under 35 U.S.C. § 103

Claims 1-2, 5-8, 11, 17-21 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Uber, III et al. (US5,840,026) As amended herein, Claims 1, 2, 8, 11, and 17-21 have been canceled, and Claims 5-7 have been amended to depend from new Claim 22. Thus, Applicant addresses this issue as the patentability of Claim 22 and its dependent claims.

Claim 22 recites, among other things, "rate control means is configured to... make an injection pattern based on the base operation-condition and the calculated total volume of the contrast medium, by moving a waveform of the variable pattern vertically depending on the total volume with said predetermined injection time unchanged." On the other hand, the delivery system of Uber needs to modify parameters manually by the operator. See Uber's specification at column 5, lines 42-45, column 9, lines 14-15, and Lines 66-67. Accordingly, Uber does not disclose the claimed rate control means configured to make an injection pattern. Thus, Uber fails to teach or suggest all of the features of Claim 22. Therefore, Applicant respectfully submits that no *prima facie* case of obviousness has been established with respect to Claim 22.

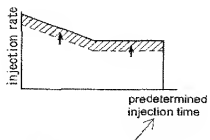
In the claim, the terms "base operation-condition" and "injection pattern" are used to clarify the currently claimed invention. The term "base operation-condition" means a pattern that includes data of waveform of the variable pattern and data of predetermined injection time, and the term "injection pattern" means a pattern obtained by modifying the base operation-condition. The injector according to the present invention will perform the injection based on the "injection pattern".

<base operation-condition>



Calculation for
total volume of the
contrast medium

<injection pattern>



Even though the injection rate
is changed, the "predetermined
injection time" is not changed.

Support can be found in the specification at page 12, lines17-25:

Then, CPU 111 reads the data of the variable pattern from ROM 112 in step S13. CPU 111 generates the data of an injection pattern corresponding to the variable pattern for injecting the calculated total amount of contrast medium in a predetermined period of time in step S14. For example, if the variable pattern is set according to a predetermined waveform as shown in Fig. 6, then the waveform of the variable pattern is vertically moved with the injection time unchanged, so that the area surrounded by the waveform and the X and y axes will be commensurate with the total amount of contrast medium to be injected.

More specifically, according to this paragraph it is clear that the injector according to the present invention performs following operations;

- reading out data of variable pattern (i.e. "base operation-condition"), and
- making a pattern for injection by modifying said pattern based on the total volume of the contrast media with predetermined injection time unchanged.

Therefore, Claim 22, by no means, present any New Matter.

Discussion of Patentability of New Claim

New Claims 23-26 recites a method of injecting a contrast medium into a subject by moving a waveform of the variable pattern vertically depending on the total volume with said predetermined injection time unchanged, so that the area surrounded by the waveform will correspond to the volume of contrast medium. Ueber is completely silent about moving a waveform of the variable pattern vertically depending on the total volume with said predetermined injection time unchanged. Therefore, Applicants respectfully submit that no *prima facie* case of obviousness has been established with respect to Claims 23. Moreover, these features provide an

unexpected advantage which further evidence the non-obviousness of the claimed invention. In particular, a preferable enhancing will be obtained and consumption of the contrast medium can be saved, as the "variable pattern" (see Fig. 6 and 9) will be used for the injection. In addition, according to the present invention, the injection time will not vary regardless of patient's weight, therefore, variations of the peak time in a time-contrast enhancement curve will be small, thus complicated setting for the scan timing of CT scanner is not required.

Furthermore, as an example, in case of monitoring a progressing of disease, a series of image diagnosis are required. In such case, it's important to obtain high repeatability of the enhancement for accurate assessment by a doctor. To address this, it is essential to control both parameter of the total volume of contrast medium and the injection time. According to the present invention, not only the injection time but the total volume can be controlled. Specifically, in the present invention the total volume of contrast medium can be calculated appropriately based on patient's weight. Then, even if the total volume is increased or decreased, the overall injection time is not changed. Therefore, according to the present invention high repeatability of the enhancement will be obtained.

The rest of the new claims depend from Claim 23, and further define additional technical features of the present invention. In view of the patentability of Claim 22, and in further view of the additional technical features, Applicants respectfully submit that the Claims 24-26 are also patentable over the prior art.

CONCLUSION

In the light of the applicant's amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather,

any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: April 21, 2011

By: /daniel altman/
Daniel E. Altman
Registration No. 34,115
Attorney of Record
Customer No. 20995
(949) 760-0404

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